

**ABSTRACT**

A variable rate particle counter for adjusting the volumetric delivery rate of fluid to a flow cell based upon an initial particle count rate in order to effectively "tune" the final dilution of sample sheath flow to the particle concentration of the sample. A sheath fluid syringe pump and a test sample syringe pump are driven by motors which are adjusted by a data analyzer. The data analyzer compares a particle count rate measured by a detection assembly to a predetermined reference value and determines if the count rate is too high or too low. Accordingly, one of several pump profiles is initiated to adjust the flow rate of the sheath fluid or test sample or both. Advantageously, the low cell count precision is improved and the upper limit cell count is expanded.